Building Services News

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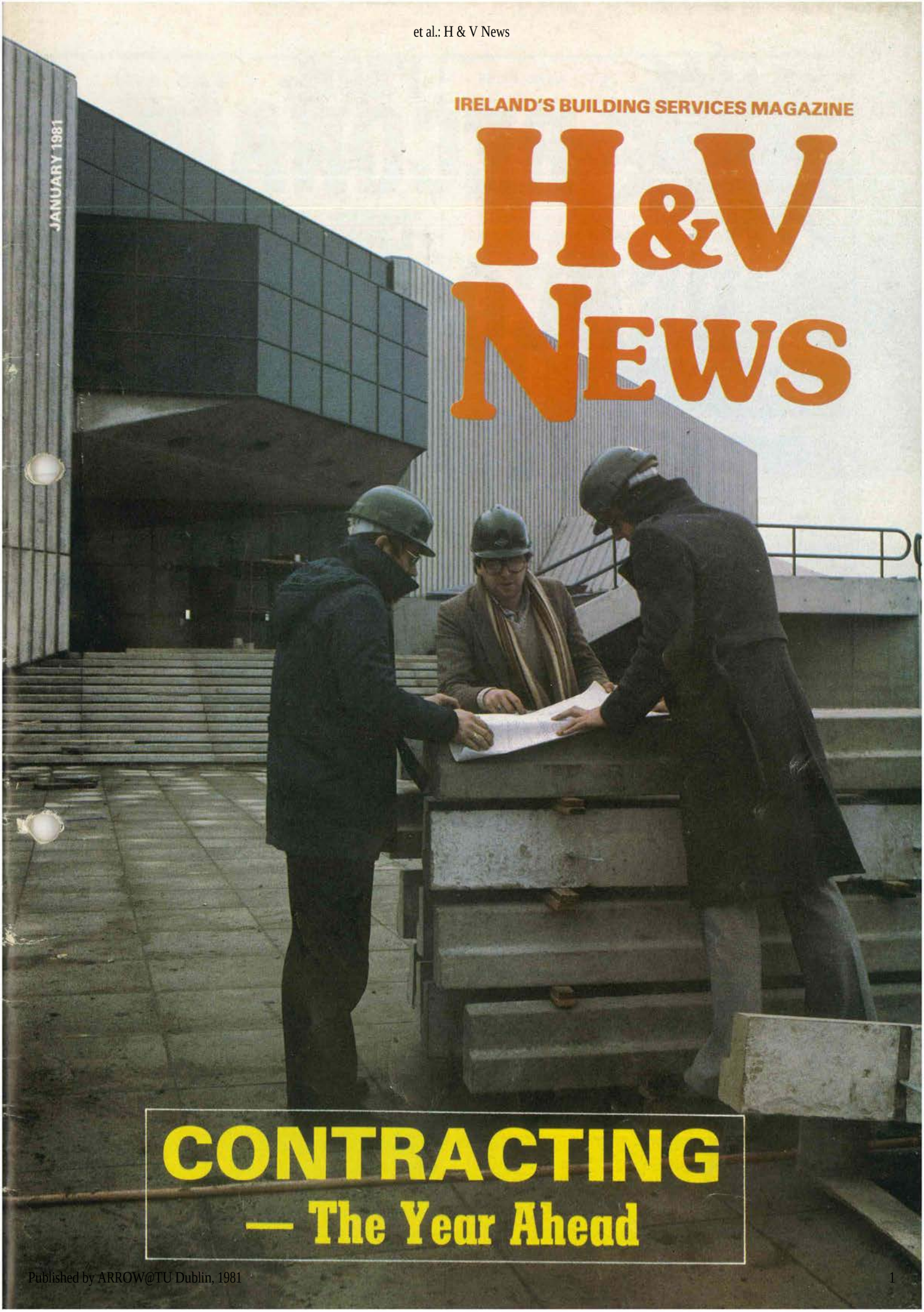
H & V News


JANUARY 1981
IRELAND'S BUILDING SERVICES MAGAZINE
H&V NEWS
CONTRACTING
— The Year Ahead

H&V NEWS
IRELAND'S BUILDING SERVICES MAGAZINE.

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DON'T FORGET IHVEX '81 AND ILECTRA '81 IN THE RDS DUBLIN 17, 18, 19th FEBRUARY

Contracting — The Year Ahead

Contracting, or to be more precise, sub-contracting, in the building services industry had always been a very competitive field and up to recently the sub-contractor was willing to accept the archaic methods of payment which had been imposed on him, but with the unprecedented rise In bank interest charges any monies outstanding for any length of time makes for a very shaky financial base for any company to depend on. Our cover story this month looks at the problem and makes some suggestions as to what should be done to relieve the problem. . . . . PAGE 2

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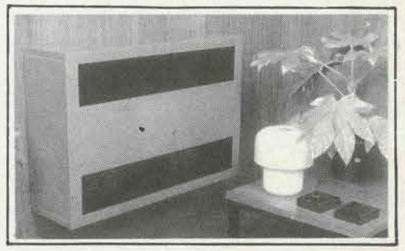

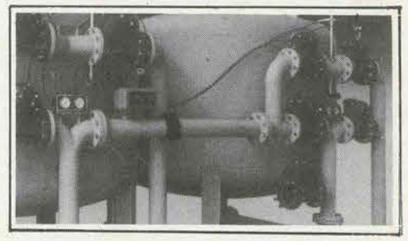

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CONTRACTING — THE YEAR AHEAD

As we start the second year of the eighties, every contractor must ask himself the question. "Why am I in business?". The only answer to this question must be to make a profit. Other answers such as remaining in business to earn a living, to keep people employed or to be independent, are secondary to this, as without a profit any of these things cannot be realised.

To make a profit, the price has to be correct the first time. In other words, the quotation for the job must be realistic. It must ensure that a profit be made on the job without the help of extras or deviations. Unfortunately, many firms believe that, if they can maintain their high turnover, irrespective of profit, they can hope to get over a bad patch. This works for a while until the turnover starts to drop or just level off, immediately the firm is in trouble and as they have no profit made to rescue them, the firm can no longer survive.

Slashing prices is not the way to be competitive, rather it is increased efficiency that will make every contractor ask himself "Do I know what the job will cost? How quickly or how slowly are the payments? What steps did and can I take to influence the speed or otherwise of the payments? How was the work programmed?"

Did the contractor plan the job carefully or it just happen? Most contractors are familiar with planning in some form or another. Most general contractors use line charts or critical path analysis methods and the contractor has to comply with the building programme. Yet although work programmes are firmly adhered to (which is not easy), mention is rarely made of adhering to a programme of payments.

The work programme is reviewed as the job progresses and while everybody is anxious to explain why a section of the job was not finished on a particular date, nobody ever tries to explain why the payment did not arrive in time.

If it is possible to prepare a programme for the contract, it is also possible to prepare a programme for payments. This should be insisted upon at the onset of a job and should be an item for review at each site meeting. The contractor should clearly state his dates for delivery and have this part of his programme at the commencement of the job, then the client would know in plenty of time what his commitment would be to the building services contractor as the various stages of the job progresses. With regard to payment, this is the whole problem and affects the flow of the job.

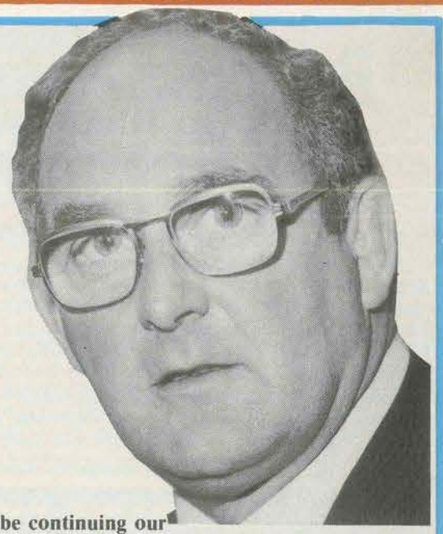
The system of payments to the contractors is archaic. We have the ridiculous situation which has been allowed to continue where the contractor is paid through a third party. How often has it happened that the contractor has a job, 90% completed before he is paid 50% of it? Indeed some times, he has it completed before he receives any payment.

Then we find that anything from 30%-80% of the total price of the job will go into the final account, and this, for many reasons, almost all of which are outside the control of the contractor, can at best take three months and up to a year to agree.

This is a situation which the contractor cannot afford to allow to continue. The contractor must insist on direct payment and must further insist that his final account cannot be held up by the failure of any other contractor or sub-contractor, to agree on producing a final account. This means that the contractor must be highly efficient and must have all his paper work in order. He must have all his claims for increased costs up-to-date and presented with each claim and must also insist on them being cleared and certified with each claim.

"The contractor must insist on direct payment and must further insist that his final account cannot be held up by the failure of any other contractor or sub-contractor, to agree on producing a final account."

The following are messages from the Chairman of both the Chartered Institution of Building Services and the Institute of Domestic Heating Engineers for the year 1981, both look forward to a busy year ahead.



Chartered Institution of Building Servies — Michael McDonagh, Chairman (right).

We, in the CIBS, are looking forward to a very active year in promoting the Institution's affairs in our Branch, particularly the one day Seminar on 'Practical Energy Strategies' which will be run during the IhVex/Hectra Exhibition and our other visits and technical papers and, of course, our Annual Golf outing and Ladies evening in May.

We, also, will continue to encourage the recruitment of the right calibre of student into the industry through the new CIBS Schools Recruitment Package which we are adapting to suit local conditions. To encourage those already studying in the industry, we will be continuing our student award schemes and in the coming year we are, also, sponsoring an educational visit to the UK, by a party of students from the College of Technology, Bolton Street. The integration of our lighting and heating members, which is progressing very well, will also receive our full attention.

So, all in all, we have a busy and interesting year ahead of us and my hope is that our activity will be matched by similar activity in the Construction Industry and all other sectors of business in our Country.

Institute of Domestic Heating Engineers — W. G. Penrice, Chairman (left).

Since the removal of the grants to reduce dependance on oil, a marked change has taken place in the volume of interest to change over from gas or oil to solid fuel. There is, however, an interest still in installing solid fuel with existing oil and gas systems. One fact has emerged from the renewed interest in solid fuel, which is that the extertise required to instal and design solid fuel systems is indeed, sorting out the men from the boys. I feel there is a good immediate future for contractors and installers that are able to come to grips with the old and basic principles of designing and installing.

I also feel that there would be good sense in not forgetting the application of gas installations, as I feel there could well be a renewed interest in the not too distant future.

NEWS

Brennan Group Air Handling Units

Because of the expense of shipping air handling units from abroad Brennan Group recently set up a manufacturing division to manufacture air handlers in Ireland.

The company market the main components as separate items — viz. heating and cooling coils, and fans. These items are manufactured by Haynes Coils (Kettering) Limited and Neuero of Germany respectively. Units are now available in sizes up to 160,000 m^3/hr and can also be made to measure to suit almost any application. Motors are of the T.E.F.C. up to 7.5 kw and thereafter Drip-Proof. Units can be fitted with iby motors, flame f motors or variable d motors. A wide :e of attenuators is able when exceptional- iiet operation is called All coils are tested to 16)spheres and are de- :d to give maximum transfer per unit area oil. They are designed low for expansion and contraction without distortion. A drip tray and drain connection are integral parts of all cooling coils. Filters can be provided for any standard of filtration required. Easy access is ensured with easily removable doors. All units are available in a fully weather-proofed version for outdoor mounting.

Full details from Brennan Group of Companies (Manufacturing Division), 60, Cookstown Ind. Estate, Tallaght, Co. Dublin, (Tel: 514711 (7 lines)) Telex 33339 EI.

H&V NEWS PRODUCT FEATURES FOR 1981

The following is a list of product features we hope to publish during 1981. For the first time we hope to travel to Munste and Ulster to do what will be the first special regional features in which we will look at the industry in that particular area. We will be going back to Ulster at the end of the year to the Heatair exhibition in Belfast and of course every month will see the pre IhVex issue of H&V News.

	SPECIAL FEATURES PROGRAMME 1981
JANUARY	(1) WATER TREATMENT & BOILER DESCALING (2) FILTERS, FANS, BLOWERS & AIR FILTERS
FEBRUARY	(1) IHVEX/ILECTRA CATALOGUE (2) PIPEWORK & DRAINAGE
MARCH	(1) AIR CONDITIONING & VENTILATING EQUIPMENT (2) PUMPS & CIRCULATORS
APRIL	(1) SAFETY & FIRE FIGHTING EQUIPMENT (2) SPECIAL REGIONAL FEATURE — MUNSTER
MAY	(1) REFRIGERATION — INDUSTRIAL & COMMERCIAL (2) RAINWATER SYSTEMS
JUNE	(1) BOILERS & BURNERS — INDUSTRIAL & COMMERCIAL (2) GRILLES, LOUVRES & DUCTING
JULY	(1) RADIATORS & CONVECTORS (2) CHIMNEYS & REFRACTORIES
AUGUST	(1) AIR HANDLING UNITS (2) SPECIAL REGIONAL FEATURE — ULSTER (3) INSULATION — THERMAL & SOUND
SEPTEMBER	(1) SANITARY WARE (2) INSTRUMENTS & CONTROLS
OCTOBER	(1) DOMESTIC BOILERS (2) HEATAIR EXHIBITION
NOVEMBER	(1) COLD STORES & EQUIPMENT (2) STORAGE TANKS & PRESSURE VESSELS
DECEMBER	(1) TUBES & FITTINGS (2) PLUMBING EQUIPMENT & SUPPLIES (3) SEASONS GREETINGS

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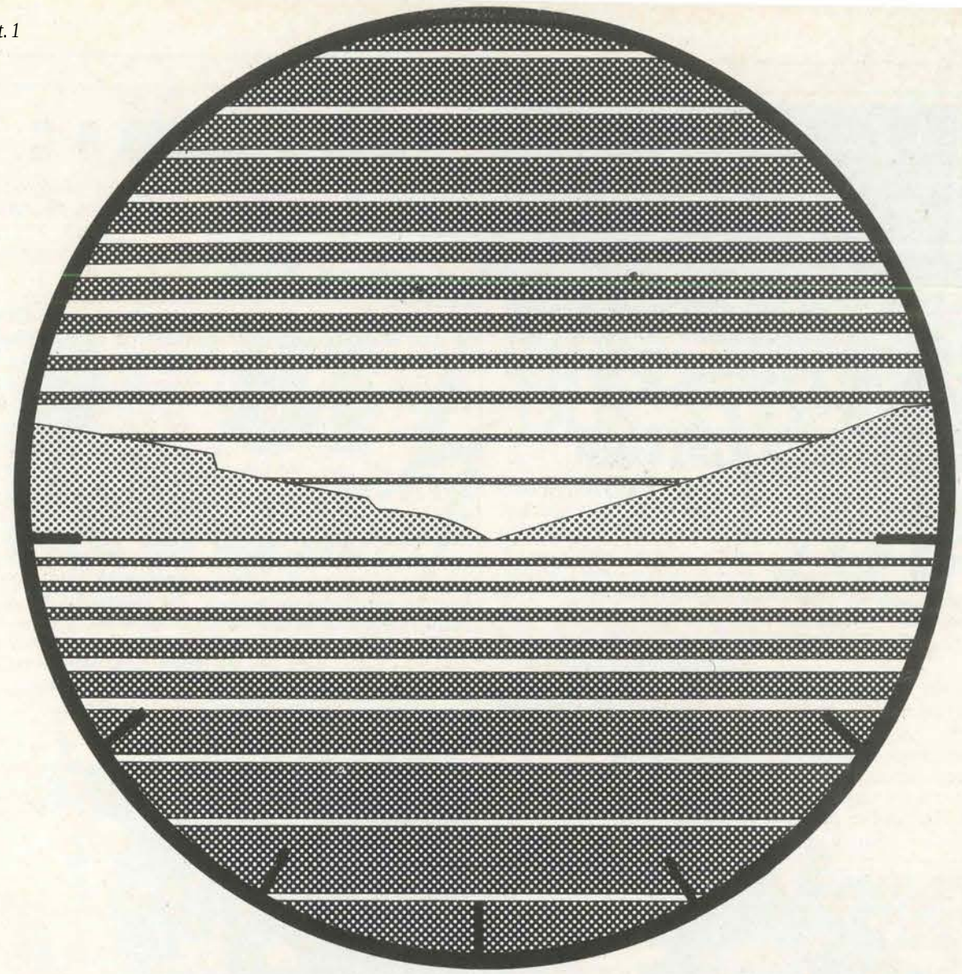

● Pictured at the recent exhibition of Sauter energy management systems were (L-R): Peter Heppel, Sauter Automation; Tom Rourke, Dwell Controls Ltd; Michael Doherty and Denis McKenna, Delap & Waller, Consulting Engineers.

SAUTER EXHIBITION

Through their Irish agents Dwell Controls Ltd, Sauter Automation Ltd held an exhibition in Dublin recently. The exhibition showed the Sauter EY 1200, Mini Micro Computer Energy Management System.

The Sauter EY 1200 System utilizes micro electronic technology to provide supervision and control of mechanical services plant. The system has energy programmes that cover power demand, heat control and load cycling and can monitor and control heating, ventilating and air conditioning plants and provide alarms through the computerized data centre. Pre-programme stop/start systems and optimisation is also available. The system is very flexible and enables the operator to programme and achieve major energy savings. Facilities enable lighting, fire and security to be added to the standard system.

OIL — MINUS 9°C

Home-heating oil is much less likely to freeze up this winter following the adoption of Government guidelines by the Irish Refining Company.

It was announced recently that the company is to start manufacturing gas and diesel oil at the Whitegate Refinery to a specification of minus nine degrees celsius.

This will be consistent with the anti-freezing standards now operating in the United Kingdom and will, in fact, mean that there will be less chance of home-heating oil freezing in this country than in Britain because of the milder climate we enjoy here.

A controversy arose in recent weeks as a result of the failure of the major oil companies to introduce the Government recommendations geared to prevent domestic heating oil "turning to jelly" during periods of low temperatures.

qThere were allegations that the oil companies had failed to implement the Government guidlines and were, therefore, responsible for considerable inconvenience which had been caused to domestic customers.

A spokesman for one of the oil companies said that while the new system did not provide a blanket guarantee that home-heating oil would not freeze up it at least meant that the consumers in this country are now better protected in this area than their counterparts in Britain.

● At the recent BTU Golfing Society outing at Hermitage GC were (L-R Brian Farrell, Pump Services, runner-up matchplay; Eddie Egan, Secretary BTU Golfing Society; Bernard Sweeney, Sweeney Sheet Metal, matchplay Golfer of the Year; Peter Johnston, Captain, BTU Golfing Society; Charlie Goodie, Goodie Boiler Services, runner-up, Golfer of the Year.

● Pictured at the final BTU Golfing Society outing for 1980 in Hermitage GC were Mr & Mrs John Ennis, Redboro; Mr & Mrs John Lavelle, Teddy Boilers; and Mr & Mrs Paul O'Gorman, O'Gorman Engineering.

Following the presentation of the paper indicating the Government policy as regards the winding up of the N.I. gas industry, the L.P. Gas Association of N.I. held a news conference to draw attention to the fact and their displeasure that no compensation was proposed for those who decide to replace their town gas appliance with one using L.P.G.

A campaign will be launched to gather support for the Associations point of view.

Two of the best supported lectures for some time have recently been held in Belfast. The first, sponsored by the N.I. Section of the Institute of Energy was given by ;Dr. Les Brealey, of the Mechanical Engineering Development Section of N.E.I. John Thompson — Clark Chapman Dr Brealey spoke of the development to which his company has undertaken in the provision of fluidised beds for shell boilers.

Before the meeting few people knew much about fluidised beds and indeed were sceptical about they being fitted to shell boilers in the foreseeable future.

At the end of an hour they not only knew a lot about the beds but also realised that there was a strong possibility that a shell boiler complete with a fluidised bed may be with us very much sooner than expected.

The second lecture under the sponsorship of the N.I. Energy Managers Association was given by Mr. L. McGriskin, Chief Engineer of P. J. Carroll & Co. Ltd. of Dundalk.

● On the NI Insulation Centre Ltd stand at the Home Heat Exhibition were Mr K Thompson and Mr C Thompson.

Mr. McGriskin gave details of the work which had been undertaken by his conservation units as a result of which impressive energy savings had been achieved at the Dundalk factory.

Listeners were impressed to hear of the savings whichhad been made particularly in view of the fact that the amount of capital involved had been minimal Mr. McGriskin also spoke of the savings which had been achieved by the installation of an incinerator.

Both Mr. McGriskin and Dr. Brealey know that their efforts had been appreciated when they each had to undertake a hard and sustained question time, which continued even after the closure of both meetings.

Unit Construction (NI) Ltd have announced the appointment of Mr. David Taylor as construction manager. Mr. Taylor was previously with Loungs.

John Kelly Ltd. the Belfast Fuel distributors and heating merchants have acquired the whole of the share capital of Aerocowl Maketing Ltd. Directors of the new company are W. Devlin, J. Hingston and R. McCheshey with Dr. A. Mitchell inventor of the Aerocowl retained as a consultant to the company.

Thos. K. Webster of Newark on Trent manufacturers of the Webco range of sectional chimneys and flue ducting have appointed P & D Macfarlane Ltd. 51/53 Ridgeway Street Belfast to be their Northern Ireland agents.

Chimney's of stainless steel insulated sections can be erected to form a complete chimney either on the outside of a building or in the cased multi-flue system.

Macfarlanes will if requested erect the chimneys in addition to which a full design service is available.

Full details are available from Donald Megahey of P & D Macfarlane Ltd.

The Northern Ireland Training Executive in cooperation with the N.I. Energy Managers Group have completed their first Energy Managers

● Visiting the Calor Kosangas (NI) Ltd stand were: Mr J Duffy (G&J Derry Prods Ltd); T Baxter (Calor); M McMahon; G Derry (G&J Derry Prods Ltd).

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Course.

The first course held in the Training Board Centre at Nutts Corner was designed for energy managers plant and maintenance engineers where for two days they heard a series of lectures designed to focus on the daily problems of energy management and conservation.

One day was spent dealing with the problems of heating, ventilation, insulation and lighting while the second was devoted to boiler plants, burner controls etc.

The lectures were drawn from local and cross channel industry and concentrated on the practical problems being experienced in a normal factory or commercial premises.

The courses are confined to 25 persons at a time thus allowing for closer discussion. Following the success of this initial programme it is intended to run a further series details of which are available from B. Page Esq., I.T.B. House, Glenmount Road, Church Road, Newtownabbey.

Anglo International Mining, a Hague based British company, have taken over one of Ulster's major civil engineering, J.M.T. Contractors Ltd.

J.M.J. formed a number of years ago, have proved to be one of Ulsters most successful new companies, carrying out major contracts in the South of Ireland, the Scottish offshore activities and overseas.

Mr. Sam Nutt, Managing Director in confirming the take over stated that it was principally a take over of the companys share holdings and would not mean any material change in either the work force or the companys activities.

An interesting survey just completed shows that there appears to be a strong preference in N.I. for solid fuel heating.

The survey showed that 67% or 317,000 homes used coal, oil 13.9% or 65,900 homes, electricity 12.6% or 59,000, town gas 5.6% or 26,700 while bottled gas had 1.0% or 4,700 homes.

Pipeline Components of Ballynahinch have been appointed sole N.I. distributors for Neptune Glenfield's range of valves, hydrants and flow control products.

● One of the double glazing companys at the Exhibition was Viscount Double Glazing Ltd who had on their stand R G Heron and F Haslam.

PRODUCT REVIEW: FILTERS, FANS, BLOWERS AND AIR HEATERS

This is not a market which see many changes over the years and the equipment used is basic and changes only occur in the efficiency of the products but an interesting development in the market is the manufacture of traditionally imported goods by companies like Glowtherm who make air filters, and Infanco Ltd a very recently established Irish company who are making fans.

The following notes are based on material submitted by the companies concerned.

McKENNA DISTRIBUTORS

Aidelle Products are introducing a new modern look for their large Loovent extractor fans. The units are designed for ease of installation and can be fully or partly recessed into walls or ceilings to make them totally unobtrusive.

The large Loovent models have been integrated into the very successful Wallfan 6 housing, utilising the same casing, chassis and fan moulding. Powerful centrifugal fans provide the necessary performance for efficient extraction, easily overcoming high system resistance due to long lengths of ducting and outside wind pressure.

Specifiers and installers

will be pleased to hear that the new design enables greater flexibility in positioning and installing the unit. The casing measures 9 in x 6 in — the same size as a standard air-brick — and when recessed only the grille and bezel are seen, giving a modern and attractive appearance.

The Loovent incorporates an exhaust spigot for use with standard 110 mm O/D (4 in nominal) plastic pipe and is capable of extracting through systems with up to 15 m (50 ft) of ducting.

Large Loovent Extractors can be wall or ceiling mounted and may also be installed on the partition wall between bathroom and toilet to ventilate two rooms simultaneously.

Further information from McKenna Distributors Ltd, 2 Aston Quay, Dublin 2, (Tel: 773132).

AAF

AAF Ltd supplies the building services industry with a range of filtration equipment covering every efficiency requirement from that demanded by occupied air conditioned spaces to the most stringent Clean Room specification.

A complete selection is offered which includes primary filters to trap the majority of larger airborne dust particles, secondary stage filters which capture the vast quantity of small contaminants, and AAF'fs Astrocel HEPA filters which are capable of removing virtually 100% of sub-micron sized particles.

AAF's primary filters encompass disposable pads, panels and automatic rolls, a washable panel and a self cleaning unit.

The inexpensive AMERglas cell is a heavy duty viscous impingement panel filter. Filtering media consists of continuous strands of interlaced glass filaments constructed in a graduated density, bonded together and coated in AAF's Viscosine adhesive. When the panel has collected its dust load it is simply discarded and replaced.

AAF Ltd manufacture the Roll-O-Matic, the most versatile renewable roll type filter on today's market which is available in an extensive range of options. It has the advantage of low installation and maintenance costs, offers a constant resistance to air movement and has a high dust holding capacity.

A primary filter highly recommended for use in locations where above average dust concentrations occur, for example the Middle East, is AAF's Multi-Duty. The unit comprises a continuous overlapping panel curtain which passes through an oil bath where dust is automatically removed and the Viscosine coating renewed.

Increasingly popular for incorporation within air handling systems is the DRI-Pak cartridge. Offering efficiencies from 30% to 95% by the Dust Spot Test according to ASHRAE 52-76 (Eurovent 4/5) using atmospheric dust, the DRI-Pak (second stage) extended surface filter is used extensively in hospitals, computer suites and manufacturing processes where the requirement for clean air is critical. Especially suitable for building service this filter stops microscopic particles of carbon, smoke, fly ash and other contaminants from staining ceilings, walls, curtains and light fittings. Up to 12m^2 of super fine media is used in the bag construction of each cartridge, which are available in five efficiency ranges and a large variety of sizes.

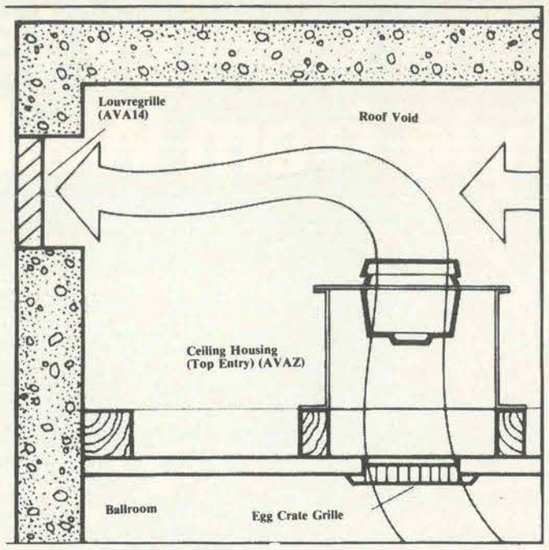
High efficiencies with long operating hours characterise the Rollotron, a dry plate electrostatic agglomerator combined with roll filter. Supplied in either compact vertical or horizontal formats, the latter being ideal for filtration requirements in air handling systems where headroom is often a limiting factor. Access from both sides effectively eliminates the need for a plenum access, enabling the Rollotron to be housed completely inside ductwork.

The SA unit is predrilled to match AAF air handling

equipment, however, it can also be easily connected to many other systems or duct attachments by 'field' drilling. Numerous advantages are offered by this design, principally it provides the same operating resistance as an automatic roll filter, plus the efficiency of a 90 grade DRI-Pak at a constant air flow resistance. It is particularly suited for use in VAV systems where it affords the lowest owning and operating costs of any equipment of comparable efficiency.

The Electro-Pak, by combining the benefits of a dry plate electrostatic agglomerator with bag filters, ensures effective efficiencies up to 97.5% (ASHRAE 52-76 (Eurovent 4/5) and depending on the dust load, can extend the life of bag filters some four or five times.

The Electro-Cell has been designed to provide maximum secondary filtration to the higher velocity air flows demanded in heating and cooling coil systems. This stationary plate electrostatic precipitator has the advantage of automatic washing and oiling of the collector plates.



The simplicity of the installation can clearly be seen. The unit is an S12/WW Vent-Axia model, and the Vent-Axia Approved Ventilation Accessories are AVA2 (ceiling housing), AVA13 (ceiling grille) and AVA14, (external louvred grille).

The Astrocel range of High Efficiency Particle Filters provide ultimate final stage filtration. Using a high density media of submicron fibres, folded into a closely pleated pak and supported by media ribbons or spacers, they are available in a wide variety of sizes, capacities and construction materials. Astrocels are used in critical locations such as nuclear laboratories, hospital operating theatres and clean rooms for the electronics and pharmaceutical industries. Each filter is individually tested providing efficiencies of 99.97%, 99.99% and 99.999% by BS3928 Sodium Flame Test.

Astrocel 1 has been developed for standard applications where face velocities of .65 m/s and 1.25 m/s are required.

Astrocel 11 has been introduced for .65 m/s applications where a small depth of filter is of overriding importance. Specifically designed to accommodate the filter is the C11 Module for use with "lay-in" type inverted tee-bar suspended ceilings. The module is widely used in Class 100 Clean Rooms and also as a supply moduel for Class 1000, 10,000 and 100,000 controlled areas, as defined in Federal Standard 209b (equivalent to BS5295, Class 1, 2, 3 & 4 respectively).

Astrocel III is a large capacity DEPA unit which offers lower installation costs as only half as many cells are required to handle the same volume as standard 1.25 m/s filters. Specially designed models are available for nuclear applications.

Quality of AAF Ltd filtration equipment is assured being part of the worldwide Allis-Chalmers Corporation it has access to the world's most sophisticated test and research centres. AAF-Ltd. has its Irish Regional Sales Office in Belfast at the Boucher Office Center, Boucher Road, Telephone Belfast 669416 with additional representation on Dublin 762626.

DAN CHAMBERS

A new concept from Roof Units Ltd packages all the best characteristics of their centrifugal fan units and presents them in slim line cases ready for connection to ducting or flexible hose systems. Speed controllers are available.

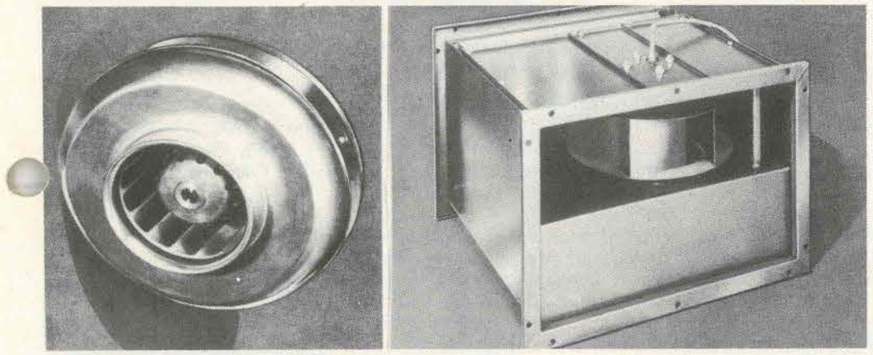
The elegantly designed external rotor motor matched to a backward curved impeller, gives quiet effortless performance against resistance and the important feature of full speed control allows the user to select precise performance in site.

The "in line" or straight through air flow concept renders obsolete additional connecting ducting to the fan unit, and since the fan is housed within the duct then only marginal space is required to contain the power unit.

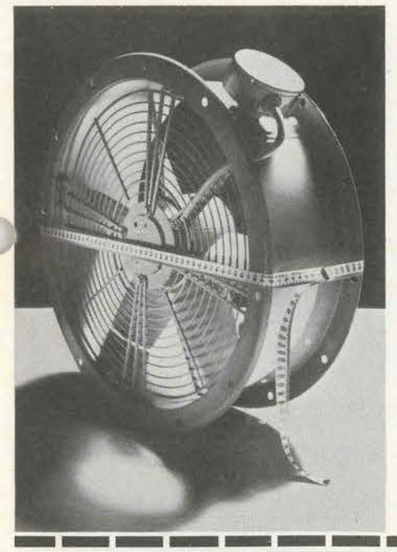
No protruding motors, no pulleys, full speed control, quiet and powerful, straight from the carbon and bolted or clipped in the system in minutes.

Performance from 100 c.f.m. to 5,000 c.f.m. operating up to 1.5 ins. w.g.

Further information from Dan Chambers Ltd, 57/58 North Brunswick St., Dublin 7, (Tel: 720971) or Environmental Supply Co (Tel: Belfast 54429).



● 'In line' duct fan from Roof Units Ltd available from Dan Chambers Ltd.



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GEC (IRELAND)

GEC Distributors (Ireland) Ltd, leading suppliers to the ventilating trade for many years, now offer an even more comprehensive range of fans and ancillary equipment ex-stock Dublin.

Included in the range are the well known Woods of Colchester regulatable Aerofoil fans 150mm to 800mm diameter, fume cupboard fans 150mm to 315mm, portable cooling fans, galvanised and fibreglass roof units for curb and purlin mounting with capacities in excess of 40,000 cfm and now all available with soaker sheets insizes 250mm to 800mm. The mixed flow fibreglass roof unit is capable of handling duties at 500 N/sq m. Also new to the range is the UDC upward discharge roof unit and the DDC downward discharge roof unit. The popular GP propeller fan is also available ex stock in sizes 250mm to 800mm diameter in four pole and six pole speeds suitable for manual or electronic regulation.

In pride of place is the Woods Varofoil fan which can perform the function required of a variable air volume (VAV) airconditioning system, where there is a constant pressure requirement for the terminal units and a varying pressure following a square law function is imposed by the distribution ducting and air-handling equipment, and also ensures maximum energy conservation.

Keith Blackman Ltd. offer a large selection of quality centrifugal fans, dust collection units and Xpelair offer a whole range of controlled ventilation and heating equipment that makes living and working a fresher, cleaner business.

The range consists of 6'', 9'' and 12'' diameter window Wall and Roof units gogether with ceiling fans, cooker hoods, humidifiers, oscillating fans and toilet duct fans. Most of the range is suitable for both individual and group control. The delay units are also available.

New to the range is the Xpelair roof mounting plates available for 6'', 9'' and 12'' roof models.

For further information contact GEC Distributors (Ireland) Ltd, 15/19 Hendrick St, Dublin 7, (Tel: 775413); Telex: 5658.

GKN AUTOPARTS

GKN Autoparts Ireland Ltd offer a free design service to architects, consulting engineers and specifiers for ventilation problems. They also carry a very comprehensive range of ventilation units and accessories. These accessories complete the range of products and provide even greater flexibility in solving all kinds of ventilation problems.

Accessories ex-stock include: Roof plate assemblies (for flat or pitched roofs), corrugated soaker flange sheets to suit most profiles, ceiling housings (for ceiling void or concealed ventilation), egg crate grilles, non vision door grilles and external weather louvres, PVC flexible ducting in sizes 102mm, 178mm, 229mm, 254mm, 305mm, and 406mm and the corresponding worm drive clips.

Adaptor kits for splitting Vent-Axia fans to accommodate a large fixing thickness between the two are also available. Four core white PVC cable is also supplied.

A comprehensive ventilation manual can be obtained from Vent-Axia Division, GKN Autoparts (Ire) Ltd, Camac Close, Emmet Road, Inchicore, Dublin 8, (Tel: 781700, Telex: 30830).

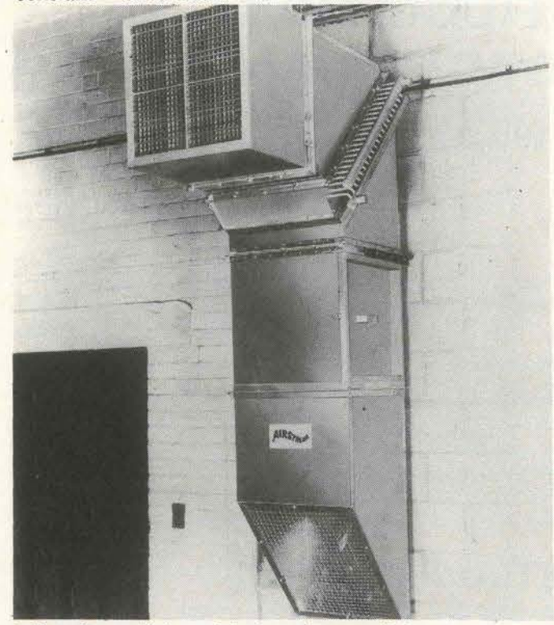
SERMET

Airstream Environmental Products is a Bristol based company manufacturing a full range of industrial ventilating and heating products. During 1979 Sermet (NI) Limited and Sermet (Dublin) Limited were appointed sole agents for the full range of equipment throughout Ireland. The first major contract secured was for the new De Lorean car factory in Belfast in which a combination of 80 Airstream recycling ventilation and heater units and 70 air handling units are providing even circulation of clean, warmed, filtered air. The principal part of the order is for 80 recycling ventilation and heater units, built from standard Airstream inlet modular components. Each unit comprises an inlet section, washable filters, hot water heater battery, fan and a high level discharge grille. These units collect the fresh air or heat provided by 70 Airstream air handling units mounted at high level. The total system provides constant circulation of clean air at an even temperature, creating good working conditions and making maximum use of the energy consumed. The fan sections used in the equipment are all fitted with Airstream's new dual wound Class F motors, developed in conjunction with Brook Crompton Parkinson Motors Limited and designed to give a minimum 15 year service life in harsh industrial conditions. The components of the units are manufactured in aluminium and with flanged connections — enabling assembly in virtually any combination. Consulting engineers for all mechanical services are Abbott & Partners of Belfast and installation work was carried out by a number of locally based companies.

Further information: Jim McFadden Sermet (NI) Limited, (Tel: 0846 682531) or Reggie Kidd Sermit (Dublin) Limited, (Tel: 01 801964).

EURENCO SALES

Eurenco Sales Ltd. is a comparatively new company in the heating and ventilating equipment sales. They have a complete range of ventilation equipment from J.J. Ventilation Ltd., Bristol. On the powered ventilation side a range of



● Recycling ventilator and heater unit as supplied to the De Lorean plant.

low profile roof extract units, vertical extract units, and powered Inblo heating and ventilation units are available. Natural ventilation, smoke and fire ventilation is covered by a range of aluminium extract units. Eurenco are distributors for Combat Engineering Ltd. who have a full range of freestanding and ducted air heaters, oil fired and gas fired. They recently have been appointed the sole agents for H.C.P. Ltd. of London, who manufacture a complete range of Perimeter Heating including fan coil heating units and natural convectors:

For further information contact: Eurenco Sales Ltd., 106 The Coombe, Dublin 8.

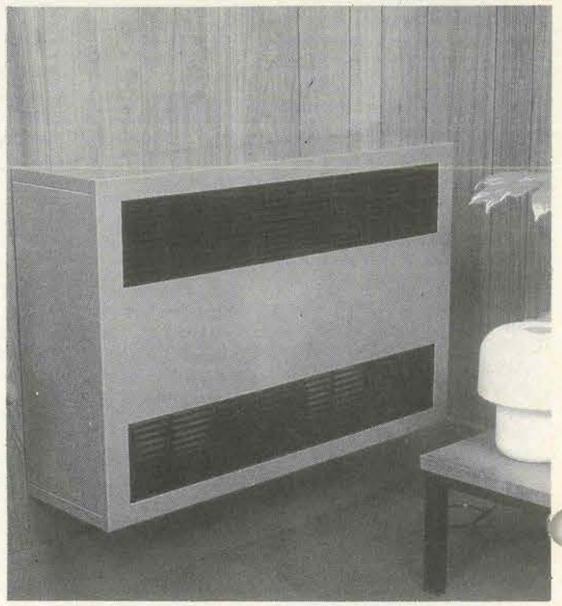
FINHEAT

'Cirrus unit heaters are a development of S & P's successful FT range, with restyled fan and guard and a new colour scheme, but retaining all the other well proved structural and trouble-free performance characteristics. The range of 'Cirrus' types, sizes and heat exchanger arrangements is so comprehensive that, where unit heaters are the preferred equipment, practically any heating requirements can be satisfied efficiently and economically. There are horizontal and vertical types each of which is available in five sizes, offering outputs of up to 120kW (400,000 Btu/hr), and with a choice of three different types of heat exchanger, a choice of fan speeds.

S & P Coil's SPM range of fan convectors is a logical development of their very successful FBM range which, with the available variations and options, has become standard equipment in many schools, hospitals and other local authority establishments.

This SPM range has the same quality and strength characteristics, but being simpler and offering fewer options, it is more competitively priced. Choice of heating duties ranging from 4.8 to 13.0kW (16,400 to 44,00 Btu/hr) at standard conditions on a quiet running speed setting.

Further information from Finheat, 34 Watling St, Dublin 8, (Tel: 778120).



● S&P Coil's SPM fan convector from Finheat Ltd.

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HEAT RECOVERY

This is the first in a series of articles on the utilisation of heat from the high pressure side of a refrigeration system and was written by Ole Larsen B.Sc., who is an engineer with Danfoss Ltd.

Utilization of Heat from High Pressure Side of Refrigeration Systems

In principle, a refrigeration system is a system in which heat is moved from a lower to a higher temperature by means of mechanical work. Since the energy crisis, a great interest has been taken in utilising this heat which is available at a relatively high temperature level. It can be done by heat recovery or by the use of heat pumps.

These designations are often used at random which is not very expedient. We have, therefore, found it suitable to use the following definitions.

Heat pumps: Systems where the primary aim is optimum utilisation of the condenser heat. Utilization of the cooling effect is, normally, of little or no importance at all, at any rate in winder.

Heat recovery systems: Systems where the primary aim is optimum utilisation of the cooling effect, and where it is tried, at the same time, to utilise part of, or all, the condenser heat for heating purposes.

At times, it can incidentally be hard to make a sharp distinction between the two concepts. By way of example,

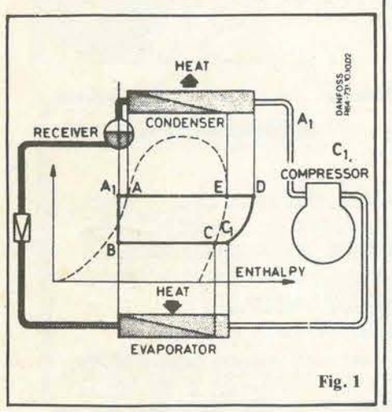

Fig. 1

refrigeration systems can be mentioned in which the cooling effect is used for freezing an icerink, and the condenser output is used for heating a swimming pool.

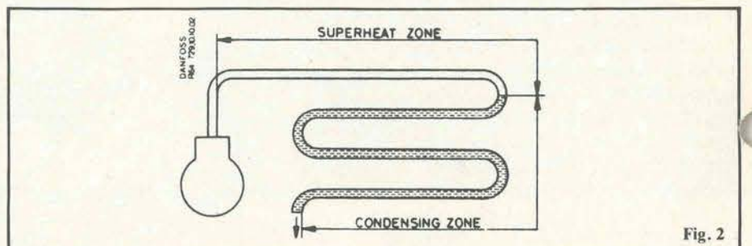

Fig. 2

Fig. 1 shows the basic design of a refrigerating system with compressor, condenser, expansion valve, and evaporator, with symbols drawn in for the liquid and gaseous phases.

The process inside the refrigeration circuit is shown on a pressure/enthalpy diagram.

A refrigerant in the liquid state will absorb heat during evaporation. It is this change of condition that causes the cooling effect of the refrigeration process. As it can be seen from the pressure/enthalpy diagram, the enthalpy is changed from B to C at a constant pressure, viz. the evaporating pressure.

The refrigerant leaves the evaporator either as saturated vapour or as a slightly superheated gas. It then enters the compressor in which it is compressed. The compressor requires supply of energy and it then does a piece of work. This work is transmitted to the refrigerant vapours and is called the compression work.

Because of the compression work, the vapours leave the compressor at a different pressure and with another enthalpy content. The extra energy supplied has the effect that the vapours are strongly superheated, i.e. that the temperature is considerably higher than the condensing temperature. In the condenser, the refrigerant emits its heat content which is transmitted from a medium at high temperature (the refrigerant) to one at a lower temperature (e.g. water or air).

The amount of heat to be emitted is the heat taken up by the refrigerant in the vaporator plus the heating originating from the compression work (fig. 2). The process continues from D via E and A to A_1 on the pressure/enthalpy diagram. The superheat is removed on the stretch between D and E, i.e. the gas temperature is reduced to the condensing temperature. On the stretch between E and A, condensation takes place at a constant temperature corresponding to the pressure in the condenser.

On the stretch from A to A_1 there is some subcooling of the lizuid because of a continuous heat emission to the surroundings.

As with engines where the economic efficiency is calculated, it can be expressed for a refrigeration system by means of the cooling factor ε

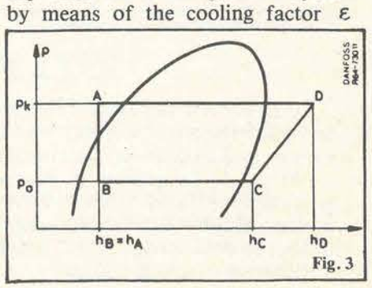

Fig. 3

how large a cold output can be obtained relative to the power input.

ε is defined as follows:

$$\varepsilon = \frac{\dot{Q}_o}{\dot{Q}_m} \times \eta \quad \text{, where}$$

$\dot{Q}_o$ = cold output

η = compressor efficiency and

$\dot{Q}_m$ = power input

If these values are transferred to a Mollier diagram (fig. 3), it follows that

$$\varepsilon = \frac{h_c - h_A}{h_d - h_c} \times \eta$$

In a refrigeration system it is preferred that the ε-value should be as high as possible since the energy will then be utilized in the best possible way. To this end, the following steps among others can be taken:

A correctly sized evaporator system with good transmission coefficients.

- Modern compressors with good efficiency. $\frac{P_k}{P_o}$
- The pressure ratio should be as low as possible, which again means that it is advantageous to work with an evaporating temperature as high as possible and with a condensing temperature as low as possible.
- A well-sized fan in the cold store; if required, air baffle plates can be fitted.
- Removal of any air and moisture from the refrigeration system.
- Preventing the oil entering the refrigeration system in too large quantities. For example, by the use of an oil separator.
- A correctly automated system.
- Systematic tending, maintenance, and cleaning of the system.

Looking at a refrigeration system with heat recovery, it is possible to derive a special ε-value, which is called vg for this system.

ε_{vg} is defined as follows:

$$\varepsilon_{vg} = \frac{\dot{Q}_o + \dot{Q}_k}{\dot{Q}_m} \times \eta$$

where $\dot{Q}_k$ stands for the condenser output. When the designations from the Mollier diagram are used, the following equation results:

$$\varepsilon_{vg} = \frac{(h_C - h_A) + (h_D - h_D)}{h_D - h_C} \times \eta$$

The above formulas are used in the following section dealing with selection of condensing temperature.

3. Selection of condensing temperature

It is necessary to know the condensing temperature in order to plan a heat recovery system. Imagine that

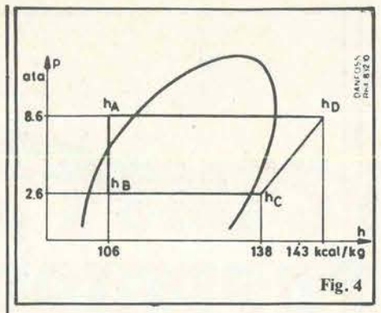

Fig. 4

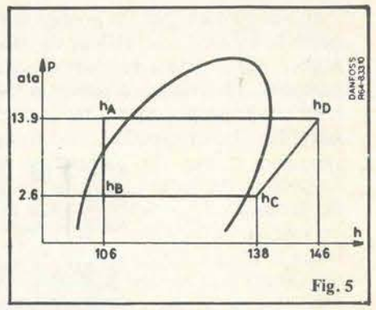

Fig. 5

you have a system with a condensing temperature of 35°C, but require a condensing temperature of 55°C in order to obtain the adequate water temperature, exclusively by means of the condenser heat from the refrigeration system. The evaporating temperature is -5°C in either case.

Under such conditions, should the condensing temperature be raised, or should extra energy be supplied in the form of e.g. electric heating?

Looking at the Mollier diagram for the two situations and assuming the same evaporating pressure, show directly that the higher condensing temperature is conditional on a higher power input. ε_{vg} can be calculated for both cases (refrigerant R 12):

$$\varepsilon_{vg} = \frac{(h_C - h_A) + (h_D - h_D)}{h_D - h_C} \times \eta$$

For the sake of clearness, η is fixed at 0.7 in either case, even though it will, actually, be largest at the low condensing temperature.

1. Condensing temperature t_k = 35°C

$$\varepsilon_{vg} = \frac{(138 - 106) + (143 - 106)}{143 - 138} \times 0.7$$

$$\varepsilon_{vg} = 9.7$$

2. Condensing temperature t_k = 55°C

$$\varepsilon_{vg} = \frac{(138 - 106) + (146 - 106)}{146 - 138} \times 0.7$$

$$\varepsilon_{vg} = 6.3$$

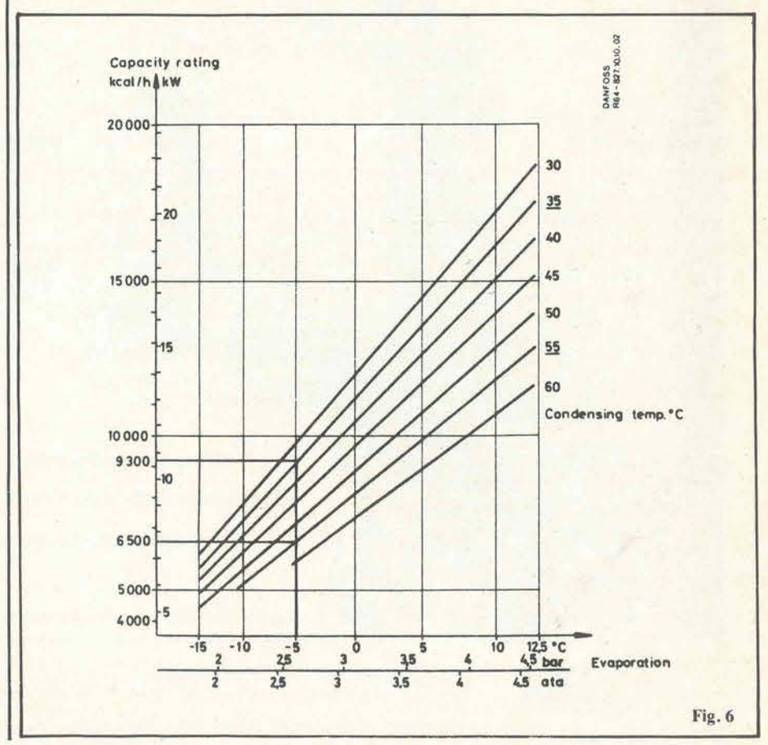

Fig. 6

It will be seen that the energy supplied is utilized less efficiently, the higher the condensing temperature becomes. The increased power at the high condensing temperature is used only for increasing the condensing pressure. Since the efficiency is reduced at the same time, and it will be necessary to reckon with an increased operating time for the system, it can be established, generally, that if the system is to be used primarily as a refrigeration system, *the condensing temperature should be as low as possible,* but a sufficient pressure must, however, be maintained before the expansion valve.

If temperatures high than the condensing temperature are required, it should be tried to utilize *the superheat* instead which is, normally, 8% to 16% of the total condenser output. It can also be illustrated in the following example.

3.1 Examples

A refrigeration system for a fruit and vegetable store is reckoned with. The system has a cooling requirement of 100.000 kcal/24 hours at an evaporating temperature of -5°C. The system is designed for refrigerant R 12 and

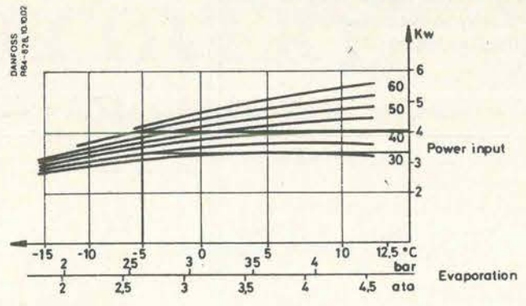

FIG. 7

has the following data:
Condensing temperature t_k = 35°C
Cold output = 9.300 kcal/h (see fig. 6)
Power input = 3.3 kW (see fig. 7)
Condenser output Q_k = 12.140 kcal/h

Condensing temperature t_k = 55°C
Cold output Q_o = 6.600 kcal/h (see fig. 6)
Power input N = 4.1 kW (see fig. 7)
Condenser output Q_k = 10.130 kcal/h.

Part 2 next month

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LPG, PUMPS AND VAPOURISATION

The following article was supplied by the Blackmer Pump Corporation.

Butane, propane and anhydrous ammonia are gases in their natural state, but they are compressed into a liquid for transport and storage. When liquefied, propane and ammonia are always at their boiling point at normal temperatures. The slightest drop in pressure or the least addition of heat will cause them to boil and give off vapor or gas. This characteristic becomes critical when considering the transfer of liquefied gases from one tank to another.

When you compress vapour or gas, you raise its temperature. (That's why the bottom of a bicycle tyre pump heats up.) Conversely when you release this pressure, the temperature drops as the gas expands. Compressed vapours condense into liquids much more readily if the heat of compression can be dissipated rapidly.

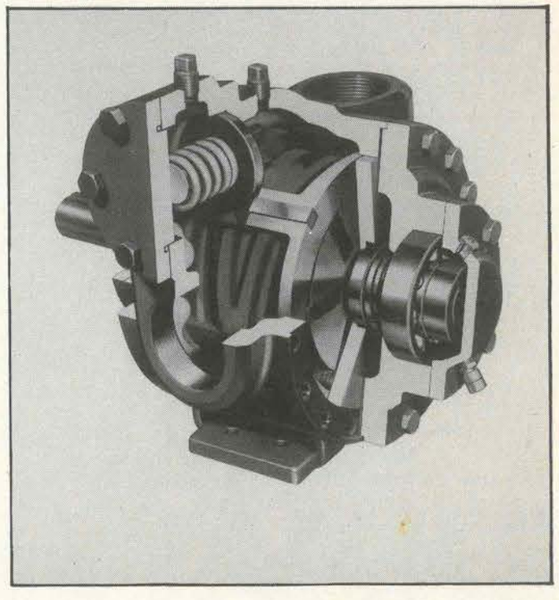
When liquid is pumped into the bottom of a receiving tank, the rising liquid compresses the gas above it, raising its pressure and also its temperature. On a hot summer's day when the normal vapour pressure of liquefied gas is quite high, this increasing pressure of the compressed vapour could approach the popoff pressure of the safety valve and could prevent filling the container to its normal liquid level. That's why many of today's tanks utilize a stray-fill loading valve. This valve sprays the incoming liquid through the vapour, helping to keep its temperature down, even though it is being compressed by the rising liquid.

When filling an older type tank with a fill connection at the bottom or with a top connection which has a dip tube carrying the liquid to the bottom, a vapour return line is desirable. This reduces the pressure build-up in the receiving tank, thus reducing the pressure on the pump and allowing the receiving tank to be filled to the proper level. Without a vapour return line, the pressure in the receiving tank on a hot day could cause the safety relief valve to open.

When you transfer liquefied gas from one tank to another, as the liquid level drops, the vapour above expands, and its temperature and pressure drop. Immediately, the liquid begins to boil, creating vapour bubbles. The velocity of liquid entering the intake pipe carries some of these gas bubbles with it. Each restriction in the intake pipe drops the pressure of the liquid-vapor mixture causing the vapour bubbles to expand and causing more boiling and more vapour bubbles to form. That's why the pumping system almost never delivers as much actual liquid as its rated delivery would seem to promise. A globe valve increases the amount of vapourisation. We recommend ball or gate type valves for minimum vapourising effect.

The vapours entering the pump cause noise and vibration in most types of pumps. Blackmer pumps incorporate a hydraulic "cavitation suppression" which minimizes the effect of vapourisation, resulting in smoother operation under adverse conditions. Excessive vapourisation in the intake line also shortens the life of the pump vanes. However, there is always some vapourisation and cavitation whenever liquefied gases are pumped. If the amount of vapourisation is moderate, the pump vanes will have a reasonably long life.

The vapour return line from the top of the receiving tank to the supply tank helps to keep the pressure up in the supply tank and thus reduces the amount of boiling.



● A typical Blackmer LPG pump.

This in turn increases the flow of liquid through the system.

The effect of this vaporisation can be demonstrated on a bobtail delivery truck by attaching the delivery hose to the supply tank and recirculating the liquid. The GPM, when recirculating, is always more than when delivering to another tank because the pressure in the supply tank does not drop.

The slowing effect of vapourisation in the intake line actually imposes a rather ridged limit on the maximum delivery rate, where no vapour return line is used. This limit is about 2½% of the tank's capacity per minute, but will vary somewhat with temperatures of liquid and atmosphere and resistance in the intake line. For example, it is practically impossible to withdraw more than 50 GPM from a 2000-gallon tank that has no vapour return line. Over-speeding the pump or using a larger pump will have little or no effect, once this barrier has been reached. That's way a 3-inch pump on small bobtails often will not deliver any faster than a 2-inch pump.

Quite often, vapour return lines are too small to be effective. To check out the efficiency of existing vapour return lines, observe the pressure gauge on the supply tank during a delivery. If it shows a drop of more than two or three pounds, vapourisation can be seriously affecting the delivery rate. A more exact check would be to time the delivery rate during the first minute of pumping with a stop watch, then wait several minutes and time the rate again. The second reading will always be less than the first. But the amount of the reduction will indicate how much vapourisation has occurred in the tank and supply line.

Long intake lines should be avoided, even when they are so large that they have practically no friction loss. Here's why. At night or in cold weather, the liquid will cool off. Then, on a warm day (especially when a hot sun is shining on the pipes), the flow of heat through the walls of the pipe causes the cool liquid to rapidly rise in temperature, which in turn causes the liquid to boil, with resultant cavitation in the pump. To minimize this problem, intake lines should be sloped upward toward the supply tank so vapours can flow back into the tank. Avoid up-across-and-down pipe loops where vapours can accumulate.

UK agents for Blackmore are George Meller Ltd and Irish agents are Pump Services Ltd.

PRODUCT REVIEW: WATER TREATMENT AND CONDITIONING

The following notes are based on material submitted by the companies concerned.

A H CULLEN

A H Cullen & Co Ltd sole distributor in Ireland for Culligan water treatment plant offer a large range of package systems, water softeners, filters, reverse osmosis, deioniser, de-alkalisers, potabilisation systems and chemical dosing pumps.

Backed by Culligan International's world wide experience in water treatment problems in almost 100 different countries throughout the world, this Irish Company can provide the necessary expertise to cope with the most demanding water quality requirements.

Standard automatic equipment includes:

Water softeners: Flow rates from 0.8M^3/hr to 225M^3/hr.

Water filters: Flow rates from 1.0M^3/hr to 175M^3/hr.

Reverse osmosis: Flow rates from 3 litres/hr to 24M^3/hr.

De ionisers: Flow rates from 0.2M^3/hr to 20M^3/hr.

De alkalisers: Flow rates from 3M^3/hr to 20M^3/hr.

Potabilisation systems: Flow rates from 2M^3/hr to 90M^3/hr.

Culligan water treatment plant installed in Ireland over the past 15 years provides quality water to industrial users in pharmaceuticals, airports, soft drink manufacture, hospitals, hotels, poultry farms, meat factories, electronic component factories, car washes, and dairies.

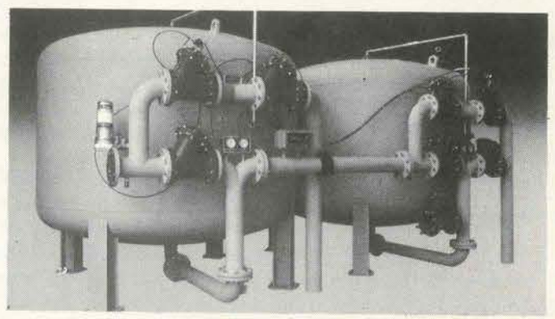
In addition there are many thousands of Culligan domestic units installed throughout the country providing soft, filtered and conditioned water to the household.

The latest addition to the Culligan range is the Omnifiltration system incorporating granule activation. An Omnifiltration system consists of two filtering tanks. Each tank contains three layers of filtering minerals having different granule size and bulk density.

Eight diaphragm valves control the water flow and are in their turn controlled by a hydraulic pilot valve which, either at set times or activating due to a differential pressure sensor, opens and closes them actuating the several service and rinse steps in an automatic sequence.

Each tank is conditioned by oxidizing and coagulating solutions. Automatic dosing pumps, ahead of the first filter tank, inject chlorine solution at the rate indicated by the raw water chlorine demand and alum solution at the maximum rate of 10 ppm. Ahead of the second tank, a third pump injects either alum at the maximum rate of 4 ppm or a polymer at the rate 0.02ppm.

The Omnifiltration system is ideal for treatment of river or lake water with suspended solids up to 300 mg/l without the necessity of pre-settling. In average conditions it will deliver



● The Omnifiltration system from A H Cullen Ltd.

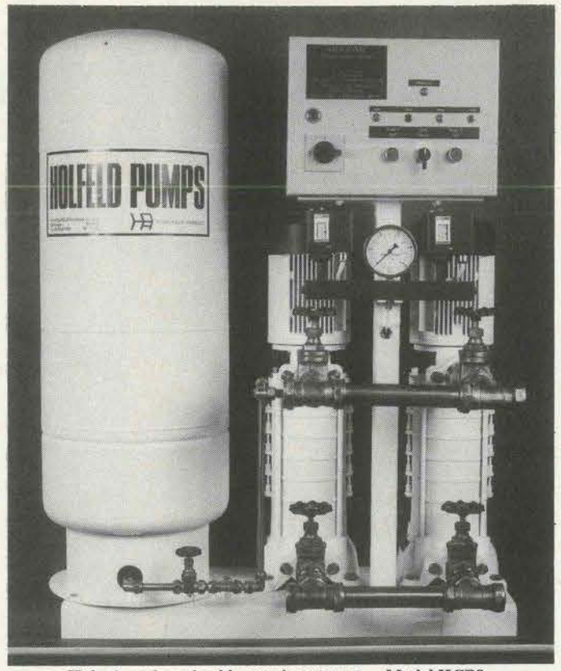
potable water with a turbidity of less than 1 NTU (Nephelo metric unit).

The big advantage of using this Culligan system is that the cost can be up to 70% lower than a conventional potabilisation system and may require only 25% of the installation space.

Full details of Omnifiltration (with cost and space comparisions) and all the other Culligan Plant may be had from: A. H. Cullen & Co Ltd, 1 Clonmore Road, Ballybough, Dublin 3, (Tel: 786455, 786059).

HOLFELD

H R Holfeld (Hydraulics) Ltd of Stillorgan, Dublin, has been associated with water supply and water treatment for over thirty years. From its original product the Waterpak piston pump, of which many thousands are still operating satisfactorily around the country, the company has expanded to the stage where today it can offer a wide range of products to the water treatment industry.



● Holpak packaged cold water booster set — Model HCP8.

The company has now settled into its new manufacturing facilities in the Sandyford Industrial Estate outside Dublin where it assembles the Grundfos range of stainless steel multi-stage pumps and submersible borehole pumps, together with the Holpak range of packaged booster systems. These products carry the Guaranteed Irish label.

Although the company does not itself become directly involved in water treatment it supplies all the leading water treatment specialists and a few of the products are detailed below.

Holpak Boosters
The company has for a long time been the leader in Ireland in the production of packaged booster systems, incorporating a number of pumps which operate in response to increased demand with an integral pressure tank and electrical control system. These booster sets are used in addition to their normal duty as a water supply unit for washdown purposes in water treatment works. The standard range uses the Grundfos vertical multi-stage pumps which are described in the next paragraph.

Grundfos CP & CR Range
These pumps are certical multi-stage pumps incorporating stainless steel impellers, guide vanes and shafts in contrast to cheaper pumps using plastic internals and are renowned for their high quality and advanced engineering. They are assembled under licence from Grundfos of Denmark and one use of particular interest to water treatment is the incorporation of a small flow pump together with a venturi to withdraw chlorine from a reservoir and inject it into a main pipeline. These pumps are available ex-stock.

AMF Cuno Filters
The company markets the well known range of AMF Cuno filters which are inline filters of advanced design. They can be used with a variety of liquids and come with either disposable or washable cartridges. Again, these filters are available ex-stock.

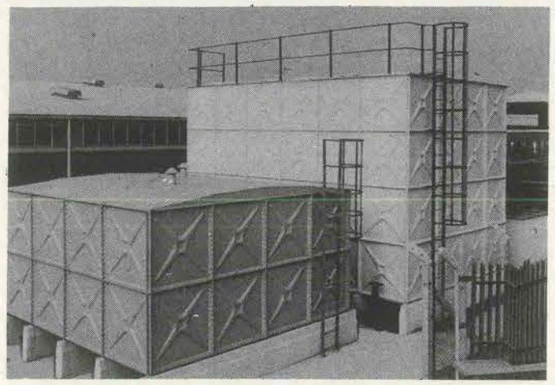
Lew Metering Pumps
The company sells the Lewa range of high quality metering pumps which find application particularly in the pharmaceutical and chemical industry.

Sulzer Static Mixers
Holfeld Hydraulics also sell the Sulzer static mixer which when inserted in a pipeline immediately downstream of a dosing pipe will in a matter of five pipe diameters or so give a homogenous solution. This eliminates the need for expensive and large volume agitators with their associated motors and high maintenance and power costs. The Sulzer static mixer has no moving parts, gives a statistically guaranteed degree of homeneity and can be used for both gas/liquid and liquid/liquid mixing. It finds particular application in pH neutralisation, ensuring the homogenity of a solution prior to sampling and in the neutralisation of chemical waste.

Penstocks
The company sells the full range of Simon-Hartley penstocks, flap valves and other fluid control equipment, manufactured both from traditional cast iron and from light weight Coplastix.

Simon-Hartley
In addition to the penstocks mentioned above, the company sells the full range of Simon-Hartley equipment including Ten-Ten sand filters, both to end users and to water and waste treatment contractors.

Further details of the above products can be obtained from Industrial Division, H R Holfeld (Hydraulics) Ltd, 2-4 Merville Road, Stillorgan, Co. Dublin. (Tel: (01) 952001).



● A typical Braithwaite pressed steel tank installation with two tanks. Braithwaite products are available from Finheat Ltd.

FINHEAT

The choice of a suitable sectional tank is primarily dependent upon site conditions in relation to the volume of storage needed. The most economical tank is one constructed from plates 1,220mm sq. with flanges arranged externally. Braithwaite sectional tanks are site bolted but they can also be welded at site. Depths of tanks do not usually exceed four plates, but deeper tanks can be specially designed.

Tanks can be enlarged in length, width and depth as storage demands increase. Care must be exercised that foundations and supports are suitable for any additional loads that may be induced. The scope of Braithwaite sectional tanks can be increased by the use of special plates, baffles and division plates.

For the rare occasions when an externally flanged tank cannot provide a required capacity at a particular site, a tank with externally flanged side plates and internally flanged base plates or with internally flanged plates throughout can be supplied. Depths of tanks so constructed should not exceed three plates.

In addition to its obvious merits in relation to the configuration of tanks the sectional method of constructional enables transportation costs to be kept to a minimum and for apparently uneconomic and unsuitable locations to be efficiently utilised for the storage of liquids.

The standard shop finish for Braithwaite Tanks is one coat of non-toxic black bituminous primer, this is intended to protect the components during transit. It is essential that tanks and structures be painted as soon as possible after assembly.

Site painting is not always necessary for galvanised tanks.

Further information from Finheat Ltd, 34 Watling Street, Dublin 8, (Tel: 778109).

R S WHITE

If experience, reliability and

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quality are important when considering water treatment then R S White Ltd, in association with 'Permutit' have all these qualities. For almost 50 years they have supplied equipment for nearly every application from portable de-ionisers for the small laboratory up to comprehensive water treatment for industrial steam boilers. R S White Ltd, can also supply a complete range of packaged equipment i.e. filters, softeners, de-ionisers, dealkalisation plants and reverse osmosis units and have designed and supplied systems for many industries which require high quality water such as the fast developing micro electronics, soft drinks, pharmaceutical and brewery industry. Activities range from standardised treatment plant to total treatment engineering covering the conservation of water and it's economic use from supply to discharge of final effluent. The treatment of any water will depend on the chemical analysis and site conditions in each individual case. If these are not readily available, R S White Ltd can carry out a full mineral analysis and site survey and their representative will be pleased to discuss and advise on every aspect of water treatment. In order to provide a comprehensive after sales service and ensure maintenance of all plant after installation, there are 'Permutit' trained service engineers available to carry out general and contract service and a complete range of spare parts are stocked at Donnybrook. R S White Ltd are the sole agents in the Republic for Houseman (Burnham) Ltd and Permutit Boby Ltd and have the support and backing of the total commercial and technical resources of the internationally recognised Portals Water Treatment Group.

For technical literature or further information on water treatment contact: R S White Ltd, The Crescent, Donnybrook, Dublin 4, (Tel: 693144 or telex 33301).

EURENCO

The 'Eurenco' industrial tank has been designed to incorporate a modular system using metric sizes in common with EEC countries. the mateials used are the most technically advanced glass reinforced plastics commonly known as S.M.C., precision manufactured in matched metal tools. The S.M.C. is compression moulded at high pressure and under closely controlled temperature conditions and offers an accurate and consistent product with properties unequalled by hand or spray laminating processes. the panels U.V. stabilised and pigmented to pale blue/grey to BS 5252 18 B 19, require no maintenance or special protection, and therefore are not subject to the damage that results to painted or plastic coated steel tanks during installation. The modular design incorporates two sizes of panel, one metre square or half by one metre. Fixing is by bolting externally or internally. If externally bolted the tanks can be erected in confined space provided 500mm is allowed around the outside of the tank. The shape of the completed tank can be infinitely varied although, in general, the two metre deep tank offer the most economic installation. Tanks may be installed on plinths, piers, underground, lofts or towers. If necessary erection staff are available from Eurenco.

Further information from Eurenco Sales Ltd, 108 The Coombe, Dublin 8, (Tel. 755557).

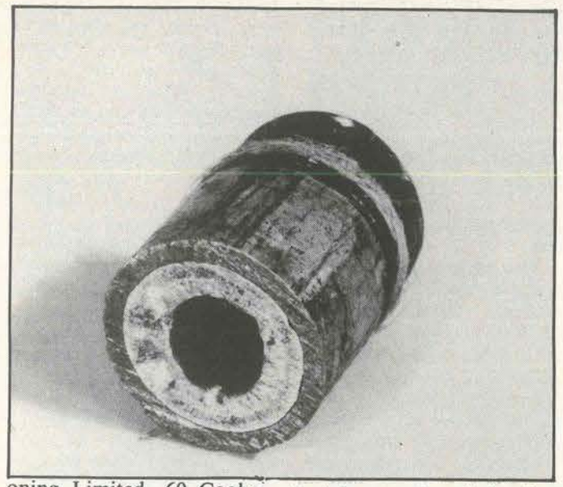
BRENNAN

The magnetic treatment o water to prevent the form ation of hard scale when heat transfer occurs, is not a new technique. In fact, it has been utilised with great effect over the last 30 years in many countries throughout the world to protect a wide variety of industrial plant, such as boilers, condensers, heat exchanges, steam cleaners, extrusion machines, vacuum pumps, sterilizers, beverage machines and dishwashers.

The CEPI-COMAV magnetic water treatment units are manufactured by water treatment specialists who also manufacture ion exchange plants, neutralising filters and iron removal units. Brennan Airconditioning Ltd, sold Irish distributors, offer a wide range of CEPI-COMAV magnetic water treatment units with flow rates from 1 l/m to 36,000 m^3/h. The units once installed have No running costs, require no maintenance, no electricity and no chemicals.

The CEPI-COMAV ef ct is not confined to hard water. It is so successful it can be used to treat such liquids as seawater, sugar juices, milk and black liquor and CEPI-COMAV units are available in all stainless steel construction for this application.

Full details available from: Brennan Airconditioning Limited, 60 Cookstown Industrial Estate, Tallaght, Co Dublin, (Tel: 514711, Telex: 33339).



Typical cross section of pipe after less than 1 years operation on hard water. Approximately 75% of cross sectional area is lost.

ISTS

Irish Specialist Treatment Systems Ltd, are a relatively new Irish company, based in Ardee, Co Louth, and operating in the field of water and waste water treatment. Whilst the company has been fully operational for only one year, its personnel have a long and successful record of involvement in this area of work.

ISTS have directed their attention to two main areas, effluent pre-treatment and sludge treatment. A high incidence of treatment plant problems are caused by inadequate pre-treatment and sludge removal. Sludge removal, has been governed, in most cases, not by the needs of the treatment system, but by the economics and availability of disposal methods. Whereas most of the practical problems of sludge disposal can be solved by dewatering, the equipment available in the view of ISTS has been too expensive to buy, too complex to operate and too costly to run. Especially for the small and medium sized works prevalent in Ireland. Equipment developments has often meant increased complexity and cost. ISTS believe that cost effectiveness comes from increased simplicity not increased complexity.

The company's aim to produce inexpensive, robust, low running cost equipment was realised with the development of their

Hydro-Press sludge dewatering system. The Hydro-Press module is based on the continuous belt press principle and is remarkable in that it is constructed from stainless steel and GRP, giving a unique corrosion resistance, and even more remarkably, its power requirement is only 0.37 kW. In fact the whole system, including chemical dosing, flocculation, dewatering and sludge conveying can operate at a power requirement equip to that of a normal domestic electric fire.

In the same stable as the Hydro-Press, ISTS have developed a new flotation system, for use in effluent pre-treatment called the Hydro-Float system.

Again its characteristics are low capital cost, low running cost and simplicity. The system, which the company claims has major advantages over dissolved air flotation, is utilised for the automatic removal of fat and grease and the flotation of solids and chemical floc. By use of a unique submerged fine bubble aerator the Hydro-Float produces effective flotation without the need for air-compressors, pressure vessels or recirculation pumps and can operate at one tenth the power requirement of a DAF system.

The process has an impressive track record, for instance, with the treatment of dairy wastes, operating at flow rates in excess of $100m^3/hr$. ISTS claim that the introduction of this equipment at a pre-treatment stage can result in a substantial increase in secondary plant efficiency, without the problems of blocking, often associated with DAF. When used for the treatment of tannery wastes the Hydro-Float can provide efficient sulphide oxidation, together with the automatic removal of floatable solids. ISTS are convinced that the relatively low capital and running costs of their Hydro-systems result in economic sense even in these difficult times. For instance, the greatly reduced sludge transport costs and manual involvement associated with their Hydro-Press system can often completely offset the cost of the capital equipment.

For further information contact Irish Specialist Treatment Systems Ltd, Greenvale Mill, Ardee, Co Louth, (Tel: 041 53772).

HOUSEMAN

The Standard Plant Division of Houseman (Burnham) Limited, part of the Portals Water Treatment Group, have recently been awarded a substantial contract with ITT Semiconductors for the provision of reverse osmosis and demineralisation plant at the company's Sidcup factory. The contract is for the installation of equipment adding to the existing system installed by Houseman, commissioned in the latter part of 1977, providing a daily flow of 30,000 gallons of purified water. The initial system was designed to accept the addition of further equipment to make the total capacity 60,000 gallons a day. The contract, which also includes point-of-use polishing, is worth approximately £120,000 and will be completed during the first quarter of this year.

The production of semiconductor chips is a highly complex and precision process which requires rinsing of the chips to remove any surface deposits. Any trace of dissolved solids or bacteriological contamination will cause bridging of the conductive mediums, resulting in an uneconomical rejection rate. The treatment, therefore, of both natural and mains water is essential. The system supplied to ITT encompasses water softening, reverse osmosis demineralisation and was designed, using standard plant equipment selected from Houseman's Standard Plant Range, in conjunction with ITT design engineers. The ultimate quality of water used in the washing process is 18 megohms.

The first stage consists of pre-treatment to reverse osmosis using a duplex of softening plant utilising standard AZA 1000 models. These are fully automatic in operation and prevent fouling of the reverse osmosis membranes by precipitated hardness salts.

The regeneration sequence in the AZA is initiated by sensor probes to ensure that no carryover occurs above the set limits into the reverse osmosis units, because of any possible variations in the water supply which would not normally be allowed for under volumetric control.

Following base exchange softening, the water is passed through reverse osmosis plant using two 3-13-3 standard Houseman reverse osmosis plants which remove up to 90% of dissolved solids originally present in the water. The Reverse Osmosis units use the Dupont B9 aromatic polyamide membrane which has a wide pH tolerance combined with a long membrane life.

The process uses high pressure pumps (400 psi) to provide the driving energy which separates the feed water into two streams, a pure water stream and a concentrated stream which carries away the dissolved salts. The rejected water is re-used within the ITT complex for cooling applications, providing further economies in the operation.

The financial savings brought about by the introduction of the Reverse Osmosis plant are the increased period between regeneration of the existing demineralisation units and, ultimately, prolonged life of the .22 micron filters at the point-of-use.

The main advantages of the Reverse Osmosis plant could be listed as follows:

1. Up to 90% saving in cost and use of chemicals for ion-exchange regeneration.
2. Proportional reduction in toxic liquor discharge.
3. Increased period between regeneration, generally increasing the capacity of the units to the hydraulic flow limits of the equipment.
4. Less fluctuations in the water quality.
5. Extension of resin life.
6. Decreased labour intensity.
7. Increase in final point-of-use filter life.

The additional unit to increase capacity to 60,000 gallons daily is a Houseman 3A-25-4 unit, handling 30,000 gallons daily.

The treated water is now processed through three automatic two-stage de-ioniser plants using TSA 500 units, the most advanced of Houseman's two bed packaged de-ionisers. The regeneration frequency of the TSA 500 units are extended to three days by the reverse osmosis pre-treatment.

The final state of production before the treated water is used for the actual rinsing of the devices is a polishing process on the individual production distribution loops, where the water is recirculated through Houseman's automatic mixed bed de-ioniser, model MBA 500.

From the circulation loop, the water is taken to the clean room areas where the water is recirculated through a 48C cartridge mixed bed ioniser prior to .22 micron filtration at the point-of-use.

The special features of the 48C are that for the first time in a unit of this compactness (producing up to 1000 litres flow per hour) the precise quality of the water can be automatically controlled by the unit without visual checks. Twenty-two units are utilised for the ITT process and are hooked up in parallel operation on four seperate loops.

The final result is an installation that will provide 60,000 gallons of highly purified water every day.

Houseman (Burnham)

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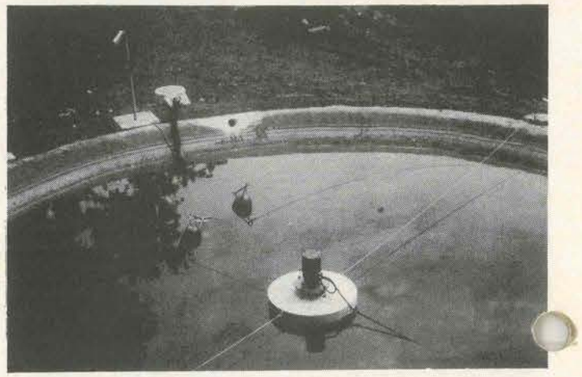
FLUID DYNAMICS

Ltd are represented by R S White Ltd in Dublin and Henry R Ayton in Belfast.



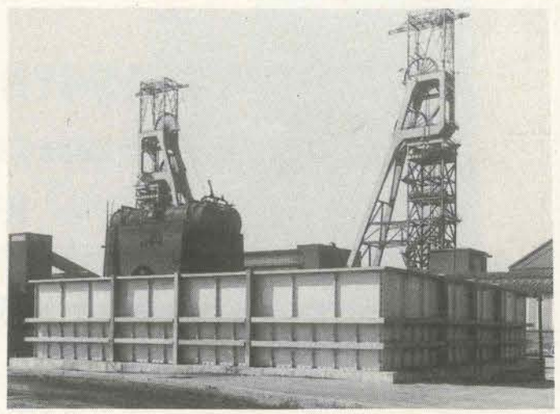
A small campsite sewage treatment scheme manufactured by Fluid Dynamics.

Fluid Dynamics was founded in 1973 for the purpose of manufacturing and exporting water treatment equipment which it now does to ten countries. They have recently moved into a new factory on the Sandyford Industrial Estate in South County Dublin and extending the range it offers from the original Colloid-A-Tron hard water treatment equipment to include Levis Water Filters (manufacturing rights acquired in 1979) and also a full range of Domestic and Industrial water filters and water softeners as well as the contract manufacture of effluent treatment plants for the food processing industry.

Fluid Dynamics have also concluded a technical co-operation agreement with one of the leading sewage effluent treatment plan manufacturing companies in France.

Under the agreement, Fluid Dynamics will manufacture and build sewage and effluent treatment plants concentrating on the smaller end of the market, towns and villages of up to 1,000 persons as well as for hotels and campsites.

With particular emphasis on compact, economical and flexible package schemes the Company will encourage the use of Butyl rubber sheet as a liner as opposed to the more traditional concrete basin wherever possible. The use of these sheets with a guaranteed life of 10 years has the effect of reducing costs by up to 50% on a small project.



A BTR Permali Sectional Tank.

New Danfoss Motor-Operated Valve

As a supplement to the existing range of motor-operated valves, Danfoss has introduced a new version type GEV4 so that the series now includes four different types. The GEV motor units are then obtainable in the following versions:

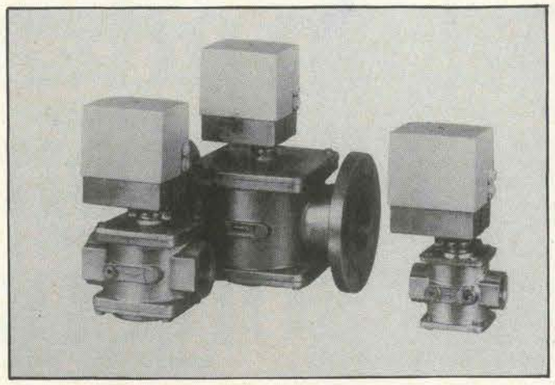
GEV1 with a single opening and closing sequence

GEV2 with an adjustable starting load position in the opening sequence

GEV3 with an adjustable part load position in both opening and closing sequences

GEV4 with a adjustable starting load position and part load position in the opening and closing sequences

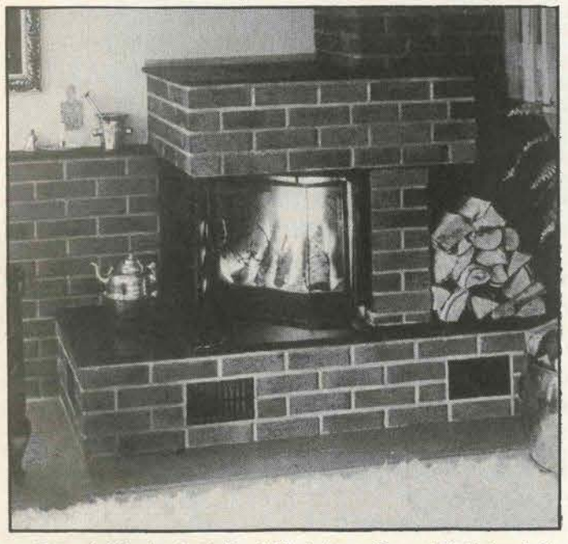
For further information, pleae contact J. J. Sampson & Son Ltd., Cherry Orchard Industrial Estate, Dublin 10, (Tel: 268111 (4 lines)).



● The new Danfoss GEV4 motor operated valve.

New Addition to Jøtul Range

A new and versatile stove has been added to the range of Jøtul stoves in Ireland. The system 17 is different from the existing range; the newly designed stove is mounted on a plinth and then enclosed by firebricks. Specially designed air vents mean that cold air is drawn either from inside the room or outdoors and circulates around the stove before re-entering the room as warm air. Like other Jøtuls the construction of the system 17 ensures a long period of heat retention with the minimum of heat being lost up the chimney. It will burn wood/turf and can be used either as an open fire or as a slow combustion stove for overnight burning when the doors are closed. However, a basket can also be supplied for coal or coke. As with all Jøtuls, there is a ten year guarantee with the new model.



● Unusual siting for Jotul 17 solid fuel stove with specially designed air vents for quick heating, using conventional chimney Jotul stoves are distributed by Grantaid Limited.

One of the advantages of this new system is the variety of finishes available. For instance, the design of the fireplace can be adapted to suit the surroundings in which it will be situated, e.g. corner or conventional chimneys. This makes it ideal for use in both new and the older type of house.

A water heating kit is also available, consisting of a copper boiler installed in the stoves' firebricks which will provide domestic hot water for an average sized family.

Further information on this new and adaptable design of woodstove may be obtained from David Couper of Tyrellspass, Co. Westmeath, (Tel: 044 23114).

Beverly-Contro Starved Air Incinerator

As fuel oil prices will continue to rise and with the uncertainty of supply there is a very real advantage in utilizing waste as an additional heat source and a way of saving fuel costs. The Beverley-Comtro Incinerator complies with all the relevant requirements on incinerator emmissions and "Clean Air Act". The unit operates on the principle of "Starved Air Incineration" giving a controlled combustion rate, whereby controlled combustible gases generated in the primary chamber pass to the secondary chamber to be burnt. Under these conditions, most of the heat required to destroy any potential pollutants is provided by the waste itself. The gases passing to the secondary chamber are completely burnt by the flame from the secondary burner and additional combustion air. The resultant reliable heat source may be utilized for the production of either steam, hot water, hot air or thermal fluid. This is achieved by drawing the hot gases through a boiler or heat exchanger by use of an induced draught fan. Efficiencies of 60 per cent and over can be achieved, which would give a quick pay-back on capital spent on this application. Anderson & Martin Ltd. are Beverely's distributors and representatives in Ireland who offer a complete technical advisory service to industry and major energy users. Anderson & Martin Ltd., Anglesey House, 23 Crofton Road, Dun Laoghaire, Co. Dublin, (Tel: 808508).

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Walker Drier Range Extended

The Walkair range of condense driers, manufactured in Denmark and distributed by Walker Air Conditioning Limited, has been extended to include a new model, designated the CD2500. This new model is a further development of the tried and tested portable models CDT2000, CDT3000 and the stationary models CDS.

The CD2500 incorporates the same heat pump principle of operation and electronic control as the other models in the range, giving optimum efficiency under all conditions and protection against the harsh treatment meted out on building sites and similar places. The condense drier operates by cooling down the humid air drawn into the unit, to a temperature below the dew point, so that the water moisture is condensed into water drops which are drained. Then the air is reheated by the heat released during the cooling process. The discharge air is then reheated and is able to absorb moisture again. The basic dimensions of the new unit are 60 x 60 cm by 115 cm high, making it easy to move around. However, in spite of its compact size, the CD2500 has a capacity of 84 litres per 24 hours. This model, like all others in the Walkair range, is controlled by a mini computer to provide for continuous running as defrosting takes place only when required. Delivery is ex stock.

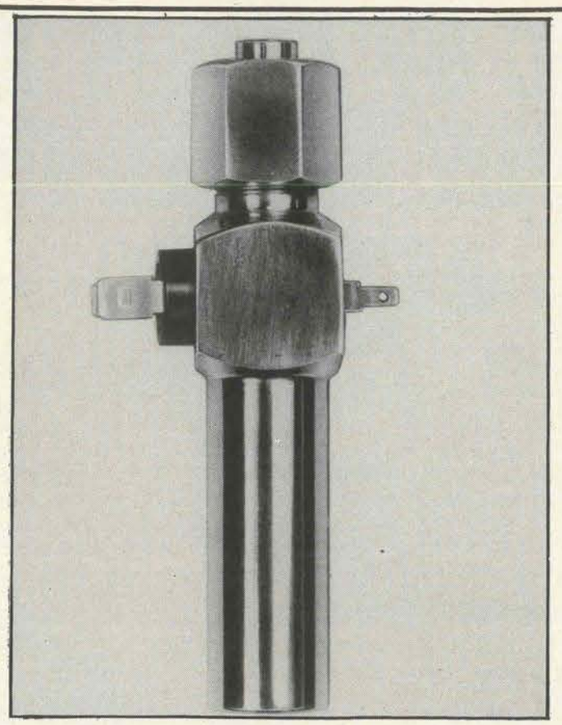
● **Right: The Walkair CD2500 dehumidifier available from Walker Air Conditioning Ltd.**

New Danfoss Oil Preheater

The principle of preheating fuel oil for large industrial burners can also be applied with advantage to small domestic burners — especially to-day where the trend is towards oils of higher viscosity and at the same time an even increasing demand for burners of lower capacity. Generally, if the viscosity is lowered by preheating the oil, the capacity of the oil nozzle will be reduced. A thin oil has a lower atomisation limit. The pump pressure can be lowered and this reduces the nozzle capacity further. To meet these demands, Danfoss is now introducing an oil preheater, type FPHA, for installation in both existing and new domestic burners for light fuel oil. The preheater is soldered onto the nozzle tube. As a heat emitter, it uses a PTC semiconductor element which has the characteristic that when a certain temperature is reached it increases its own resistance. This ensures that the temperature of the trapped oil, in the event of operational disturbance, will not exceed this limit value. Another characteristic feature is that the wattage consumption of this preheater adapts itself to both the initial oil temperature and the flow volume, instead of being constant as normal.

Technical data: Capacity, 2.5 litres/h to 70°C; pressure max. 15 bar (217.5 P.S.I.); power consumption max. 79 W and heating time from cold plant approximately 30 sec.

For further information contact Danfoss Irish agents and distributors, J. J. Sampson & Son Ltd, Unit 71, Cherry Orchard Industrial Estate, Ballyfermot Road, Dublin 10, (Tel: 268111).



● **The Danfoss oil preheater from J. J. Sampson & Son Ltd.**

SALE OF GOODS AND SUPPLY OF SERVICES ACT, 1980

The Sale of Goods and Supply of Services Act, 1980 which was enacted earlier this year comes into force on the 1st January, 1981. The Act, in the main, deals with amendments to the law relating to the sale of goods and hire purchase agreements. However, as the name of the Act implies, it also deals with the supply of services; for the first time terms are implied into contracts for the supply of services.

Section 39, Implied Undertakings as to Quality of Service, sets out the terms which are to be implied in every contract for the supply of a service where the supplier is acting in the course of a business. These terms are:

(a) that the supplier has the necessary skill to render the service,

(b) that he will supply the service with due skill, care and diligence,

(c) that, where materials are used, they will be sound and reasonably fit for the purpose for which they are required, and

(d) that, where goods are supplied under the contract, they will be of merchantable quality.

Section 40 sets out the circumstances in which these terms may be "negatived or varied", being

(a) by an express terms of the contract, or

(b) by the course of dealings between the parties, or

(c) by usage, if the usage be such as to bind both parties to the contract.

The section does provide the further qualification that where the recipient of the service "deals as consumer" it must be shown that express term is fair and reasonable and has been specifically brought to his attention. Section 3 of the Act provides a definition of the words "deals as consumer".

A party to a contract is said to deal as a consumer in relation to another party if:

(a) he neighter makes the contract in the course of a business nor holds himself out as doing so, and

(b) the other party does not make the contract in the course of a business, and

(c) the goods and services supplied under or in pursuance of the contract are of a type ordinarily supplied for private use or consumption.

In the case of sale by competitive tender or in relation to auctions of a type to be defined by the Minister by order, the buyer is not regarded as dealing as consumer. It follows that the Act does not affect the freedom of parties to agree their own terms and to exclude and restrict the terms implied by the Act where neither deals as consumer. At least in so far as consumer transactions are concerned the impact of these provisions will to a large extent depend upon the judicial interpretation of what is fair and reasonable. The Act does provide its own interpretation of sorts: Section 2(3) provides that where a question arises as to whether a term, agreement or provision is fair and reasonable regard shall be had to the criteria set out in the schedule, which in turn states that in determining if a term is fair and reasonable the test is whether the term is a fair and reasonable one to be included having regard to the circumstances which were, or ought reasonably to have been, known to or in contemplation of the parties when the contract was made.

Regard is to be given particularly to the following:

(a) the strength of bargaining positions of the parties relative to each other;

(b) whether the customer received an inducement to agree to the term, or in accepting it had the opportunity of entering into a similar contract with other persons, without having to accept a similar term;

(c) whether the customer knew or ought reasonably to have known of existent and extent of the term;

(d) where the term excludes any relevant liability if some condition is not complied with, whether it was reasonable at the time of the contract to expect that compliance with that condition would be practicable;

(e) whether any goods involved were manufactured, processed or adapted to the special order of the customer.

The Act goes further than implying terms. Section 4 applies to any statement likely to be taken as indication that a right or the exercise of a right conferred by, or a liability arising by, virtue of Section 39 is restricted or excluded otherwise than under section 40. It is an offence under this section for a person in the course of a business to:

(a) display a notice that includes any such statement; or

(b) to publish or cause to be published an advertisement which contains any such statement; or

(c) to supply goods bearing, or goods in a container bearing, any such statement; or

(d) otherwise to furnish or to cause to be furnished a document including any such statement.

A person guilty of an offence under the Act may be liable on summary conviction to a fine not exceeding £500.00 and/or a term of imprisonment not exceeding six months or on conviction on indictment to a fine not exceeding £10,000 and/or to a term of imprisonment not exceeding two years.

These provisions are severe but much will depend on the attitude of the courts and how the Act will operate, when it comes into force.

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